

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

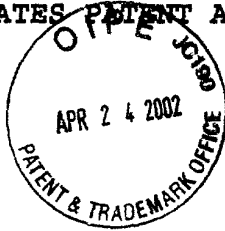
Bernhard ALLGAIER

Appln. No.: 10/073,472

Filed: February 11, 2002

For: LIFTING DEVICE

Attorney Docket No.: 2368.129



COPY OF PAPER  
ORIGINALLY FILED

SECOND PRELIMINARY AMENDMENT

Box: Missing Parts  
Honorable Commissioner of  
Patents and Trademarks  
Washington, D.C. 20231

Sir:

Prior to examination of the above-identified application,  
please amend the application as follows:

IN THE CLAIMS (CLEAN VERSION):

Please amend Claims 1, 2 and 3 as follows and please add the  
following new Claims 20-35:

1. Lift device for lifting and lowering of a support device (2, 3B, 5) of a transport track segment of a transport device for work pieces or the like, which work pieces are deposited upon plate-, pallet- or framework-like work piece carriers (58), and upon which the work piece carriers (58) are seated translationally displaceable

- with a force producing device (35, 72, 73) for producing a force for lifting or lowering the support device (2, 3B, 5) and

- with a force transmission device for transmitting the force from the force producing device to the support device

wherein

- the force transmission device includes at least one lever (25a, 25b), which on one side (29a, 29b) is coupled to be essentially horizontally displaceably guided with the force producing device (35, 72, 73) and on the other side (30a, 30b) is coupled with the support device (2, 3B, 5) and is guided for essentially vertical displacement.

2. Lift device according to Claim 1, wherein the force transmission device includes two levers (25a, 25b), which are rotatably mounted (29a, 29b) in parallel arrangement respectively on one end to at least one slide bar (16a, 16b) guided for horizontal displacement and on the other end are rotatably mounted (29a, 29b) to at least one lift bar (17a, 17b) guided for vertical displacement parallel to the slide bar (16a, 16b).
3. Lift device according to Claim 2, wherein two slide bars (16a, 16b) are provided oriented parallel and bracketing the two levers (25a, 25b).

20. Lift device according to Claim 2, wherein two lift bars (17a, 17b) are provided in parallel orientation and bracketing the two levers (25a, 25b).
21. Lift device according to Claim 2, wherein the slide bars (16a, 16b) are associated with rollers (22a, 22b) for horizontal guidance on suitable guide bars (27, 27a, 27b).
22. Lift device according to Claim 21, wherein the rollers (22a, 22b) are mounted rotatably in the slide bars (16a, 16b).
23. Lift device according to Claim 21, wherein the rollers are mounted rotatably in the guide bars.
24. Lift device according to Claim 2, wherein the lift bars (17a, 17b) are provided with guide rollers (22a, 22b) for vertical guidance on suitable guide elements (13a, 13b).
25. Lift device according to Claim 24, wherein the guide elements (13a, 13b) are connected essentially rigidly with the lift bars (17a, 17b).
26. Lift device according to Claim 1, wherein slide blocks (15a, 15b) are provided for guiding the force transmission device (16a, 16b, 17a, 17b, 25a, 25b) in the sideways direction.
27. Lift device according to Claim 1, wherein the force transmission device includes at least one pneumatic device (72, 73).

28. Lift device according to Claim 1, wherein the force transmission device includes at least one hydraulic device.
29. Lift device according to Claim 1, wherein the force transmission device includes a linear motor.
30. Lift device according to Claim 1, wherein the force transmission device includes at least one (rotation-) motor drive (35) and a conversion device for converting the rotational movement of the motor drive (35) into a horizontal linear movement.
31. Lift device according to Claim 30, wherein an eccentric disk, a crank disk (38) or the like is provided, which is driveable by a motor drive (35) and which is in operable association with one end (29a, 29b) of the lever (25a, 25b).
32. Lift device according to Claim 31, wherein the eccentric disk, the crank disk (38) or the like carries an eccentric pin, crank pin (38a) or the like eccentric to the drive axis of the motor drive (35), which engages in a linkage mount (37a) provided on the one side of a crank (20), wherein a pin (36) provided on the one side of the slide bar(s) (16a, 16b) engages in a linkage mount (37b) provided on the other side of the crank (20).
33. Lift device according to Claim 31, wherein the motor drive (35) is provided with a pressure or pull spring (18), of which the spring effect supports the start-up of the motor drive (35) at least during lifting of the support device (2, 3B, 5).

34. Lift device according to Claim 33, wherein a connecting device (42) is provided on the other side of the slide bar(s) (16a, 16b), which is rigidly connected with a spring tensioning device (41), upon which a pressure spring (18) is seated on one end and which on the other side is seated upon a spring abutment (40) rigidly connected with the guide bar (27b).
35. Lift device according to Claim 1, wherein two force transmission devices (16a, 16b, 17a, 17b, 25a, 25b, 18, 20) are provided in essentially identical form in parallel arrangement to each other, which respectively carry segments of an outer roller track (2) or an inner roller track (3B) of the support device.

REMARKS

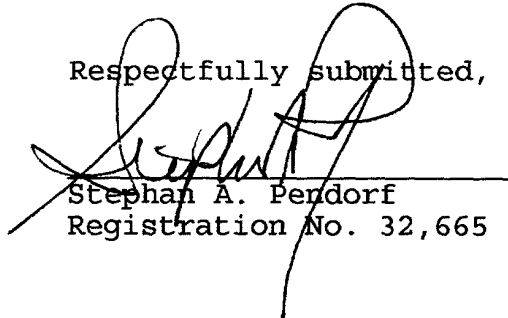
The claims have been amended to eliminate multiple dependent claims and claims improperly depending from multiple dependent claims, and to otherwise conform the claims to U.S. practice. Care has been taken to ensure that no new matter is added to the text.

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Entry and favorable consideration prior to consideration are respectfully requested.

Respectfully submitted,

  
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Registration No. 32,665

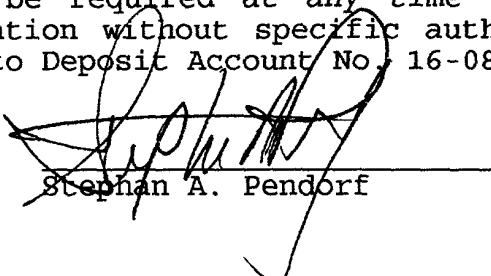
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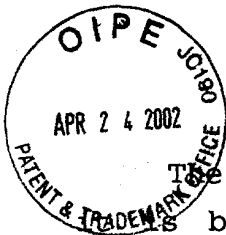
Date: April 16, 2002

CERTIFICATE OF MAILING AND AUTHORIZATION TO CHARGE

I hereby certify that a copy of the foregoing RESPONSE TO NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION for U.S. Application No. 10/073,472 filed February 11, 2002, was deposited in first class U.S. mail, postage prepaid, addressed: Box: MISSING PARTS, Commissioner of Patents and Trademarks, Washington, D.C. 20231, on this 16<sup>th</sup> day of April, 2002.

The Commissioner is hereby authorized to charge any additional fees which may be required at any time during the prosecution of this application without specific authorization, or credit any overpayment, to Deposit Account No. 16-0877.

  
Stephan A. Pendorf



VERSION WITH MARKINGS TO SHOW CHANGES MADE

The Examiner is requested to accept the marked-up version as based on the previous version, which when modified as below, produces the clean version submitted with the current amendment.

Please amend the claims as follows:

Please amend Claims 1, 2 and 3.

Please add the following new Claims 20-35:

1. (Amended) Lift device for lifting and lowering of a support device (2, 3B, 5) of a transport track segment of a transport device for work pieces or the like, which work pieces are deposited upon plate-, pallet- or framework-like work piece carriers (58), and upon which the work piece carriers (58) are seated translationally displaceable
  - with a force producing device (35, 72, 73) for producing a force for lifting or lowering the support device (2, 3B, 5) and
  - with a force transmission device for transmitting the force from the force producing device to the support device

[thereby characterized, that] wherein

  - the force transmission device includes at least one lever (25a, 25b), which on one side (29a, 29b) is coupled to be essentially horizontally displaceably guided with the force producing device (35, 72, 73) and on the other side (30a, 30b) is coupled with the support device (2, 3B, 5) and is guided for essentially vertical displacement.

2. (Amended) Lift device according to Claim 1, [thereby characterized, that] wherein the force transmission device includes two levers (25a, 25b), which are rotatably mounted (29a, 29b) in parallel arrangement respectively on one end to at least one slide bar (16a, 16b) guided for horizontal displacement and on the other end are rotatably mounted (29a, 29b) to at least one lift bar (17a, 17b) guided for vertical displacement parallel to the slide bar (16a, 16b).
3. (Amended) Lift device according to Claim 2, [thereby characterized, that] wherein two slide bars (16a, 16b) are provided oriented parallel and bracketing the two levers (25a, 25b).
- 20. Lift device according to Claim 2, wherein two lift bars (17a, 17b) are provided in parallel orientation and bracketing the two levers (25a, 25b).
21. Lift device according to Claim 2, wherein the slide bars (16a, 16b) are associated with rollers (22a, 22b) for horizontal guidance on suitable guide bars (27, 27a, 27b).
22. Lift device according to Claim 21, wherein the rollers (22a, 22b) are mounted rotatably in the slide bars (16a, 16b).
23. Lift device according to Claim 21, wherein the rollers are mounted rotatably in the guide bars.



24. Lift device according to Claim 2, wherein the lift bars (17a, 17b) are provided with guide rollers (22a, 22b) for vertical guidance on suitable guide elements (13a, 13b).
25. Lift device according to Claim 24, wherein the guide elements (13a, 13b) are connected essentially rigidly with the lift bars (17a, 17b).
26. Lift device according to Claim 1, wherein slide blocks (15a, 15b) are provided for guiding the force transmission device (16a, 16b, 17a, 17b, 25a, 25b) in the sideways direction.
27. Lift device according to Claim 1, wherein the force transmission device includes at least one pneumatic device (72, 73).
28. Lift device according to Claim 1, wherein the force transmission device includes at least one hydraulic device.
29. Lift device according to Claim 1, wherein the force transmission device includes a linear motor.
30. Lift device according to Claim 1, wherein the force transmission device includes at least one (rotation-) motor drive (35) and a conversion device for converting the rotational movement of the motor drive (35) into a horizontal linear movement.
31. Lift device according to Claim 30, wherein an eccentric disk, a crank disk (38) or the like is provided, which is

driveable by a motor drive (35) and which is in operable association with one end (29a, 29b) of the lever (25a, 25b).

32. Lift device according to Claim 31, wherein the eccentric disk, the crank disk (38) or the like carries an eccentric pin, crank pin (38a) or the like eccentric to the drive axis of the motor drive (35), which engages in a linkage mount (37a) provided on the one side of a crank (20), wherein a pin (36) provided on the one side of the slide bar(s) (16a, 16b) engages in a linkage mount (37b) provided on the other side of the crank (20).
33. Lift device according to Claim 31, wherein the motor drive (35) is provided with a pressure or pull spring (18), of which the spring effect supports the start-up of the motor drive (35) at least during lifting of the support device (2, 3B, 5).
34. Lift device according to Claim 33, wherein a connecting device (42) is provided on the other side of the slide bar(s) (16a, 16b), which is rigidly connected with a spring tensioning device (41), upon which a pressure spring (18) is seated on one end and which on the other side is seated upon a spring abutment (40) rigidly connected with the guide bar (27b).
35. Lift device according to Claim 1, wherein two force transmission devices (16a, 16b, 17a, 17b, 25a, 25b, 18, 20) are provided in essentially identical form in parallel arrangement to each other, which respectively carry segments

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of an outer roller track (2) or an inner roller track (3B)  
of the support device.--

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